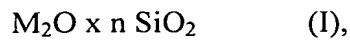


REMARKS

The present invention as set forth in **Claim 1** relates to a dried hydrogel, prepared by

polymerizing an olefinically unsaturated carboxylic acid or its salts in a polymerization reaction mixture;

admixing the polymerization reaction mixture, before, during or after the polymerization and before drying, with an alkali metal silicate of the general formula I



wherein M is an alkali metal and n is from 0.5 to 4;

postcrosslinking a resulting polymer;

thereby obtaining a **hydrogel containing said postcrosslinked polymer**; and drying said hydrogel at an elevated temperature, to obtain said dried hydrogel.

It is an object of the present invention to provide hydrogels capable of absorbing aqueous fluids which have a high absorption capacity, a high gel strength and high absorbency under load. See page 1, lines 16-19 and page 2, lines 26 and 27 of the specification.

US 5,075,371 and US 4,707,290 fail to disclose or suggest a dried hydrogel as claimed.

US '371 discloses highly cross-linked polymers for use in liquid gas chromatography. However, the polymers are **not post-crosslinked and therefore not structured**. Attached herewith is an Information Disclosure Statement citing page 97 of "Modern Superabsorbent Polymer Technology". Here it is disclosed that structured particles can be prepared by post-crosslinking. See Figure 3.9 at page 97 of

the reference. Such structured particles are different from the non-structured particles disclosed in the references cited by the Examiner.

US '371 discloses that their polymers may be made by simultaneous or sequential polymerization in aqueous medium (column 2, lines 1 to 6). As defined in the description and in claim 1, US '371 discloses a homogeneous composite hydrophilic polymer (column 1, lines 29 to 37, and column 6, lines 31 to 41). In this context a person of ordinary skill in the art cannot understand the term "sequential polymerization" as referring to the production of inhomogeneous or structured polymers. Thus, US '371 does not disclose structured polymer particles.

The result of the post-crosslinking according to the present invention are structured polymer particles. The post-crosslinking is disclosed in the description of the present invention on page 1, lines 16 to 34. "Post-crosslinking is preferably effected using compounds known as crosslinkers which contain two or more groups capable of forming covalent bonds with the carboxyl groups of the hydrophilic polymers". Post-crosslinking using multivalent cations is also known in the art.

The textbook "Modern Superabsorbent Polymer Technology" (copies attached) discloses a similar definition of the post-crosslinking step. As shown in the textbook, the post-crosslinked polymer particles are structured (page 97, figure 3.9).

That means that a person of ordinary skill in the art understands the term "post-crosslinked" to refer to forming inhomogeneous or structured particles.

US '371 discloses only difunctional acrylic or allyl crosslinking monomers (column 2, lines 5 and 6). These monomers can only react with other unsaturated compounds but do not react with carboxyl groups. The polymers according to US '371 are crosslinked by polymerization of these difunctional monomers with

monofunctional monomers forming copolymers. The crosslinking occurs by forming covalent bonds between the double bonds of the monomers.

Therefore, the post-crosslinking step is different from the crosslinking of US '371.

Further, the term "copolymers" in **Claim 21** refers to the use of multifunctional monomers in the polymerization reaction as internal crosslinker and does not refer to the result of the post-crosslinking. The result of the use of the internal crosslinker is a homogeneous crosslinking density in the polymer particles before the post-crosslinking. In example 1 of the present invention acrylic acid was copolymerized with tetraallyloxyethane (a tetrafunctional allyl crosslinking monomer). The formed polymer particles of example 1 were post-crosslinked with ethylene glycol diglycidyl ether (that forms covalent bonds to carboxyl groups by cleavage of the epoxide groups).

US '371 further discloses the use of 2 to 30 wt.% cross-linker (column 6, lines 31 to 41) and does not mention the use of olefinically unsaturated carboxylic acids or its salts as source for these polymers (column 1, lines 43 to 55).

The polymers of the present invention are water-swellaable and therefore low cross-linked (highly cross-linked polymers cannot swell anymore). Thus, the claims are not anticipated by or obvious over US '371.

US 4,707,290 discloses a granular adsorbent, comprising **water-soluble** homopolymers (column 3, lines 35 to 41). In the present invention **water-insoluble** carboxylic acid polymers are used (specification, page 1, lines 10 and 11). In US 4,707,290, the polymers are **not post-crosslinked** and thus they are **not structured** compared to the post-cross-linked particles of the present invention.

US '290 discloses copolymers but does not disclose any crosslinking. The copolymers are explained in the description (column 3, lines 16 to 52). Only monofunctional monomers are disclosed.

Therefore, US '290 does not disclose any crosslinking or post-crosslinking.

Further, regarding **Claim 21**, as shown by the examples the polymers according to the invention are cross-linked copolymers and not homopolymers. In all examples acrylic acid was copolymerized with monomers that have at least two olefinically unsaturated groups: tetraallyloxethane (example 1 and comparative example 1), pentaerythrol triallyl ether (examples 2 to 15 and 21 to 25 and comparative examples 2 to 4a, 20 and 25), allyl methacrylate (comparative example 16 and inventive examples 17 to 19). Due to the crosslinking, the water-absorbent copolymers are water-insoluble and have high molecular weights. Thus, the claims are not anticipated by or obvious over US '290.

Therefore, the rejection of Claims 1-3, 6, 7, 10-14, 16 and 18-21 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over US 5,075,371, the rejection of Claims 4-5 and 17 under 35 U.S.C. § 103(a) as being unpatentable US 5,075,371 and the rejection of Claims 1-4, 6, 7, 10-16 and 18-21 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over US 4,707,290 are believed to be unsustainable as the present invention is neither anticipated nor obvious and withdrawal of these rejections is respectfully requested.

The objections to Claims 15 and 19 are moot in view of the cancellation of these claims.

This application presents allowable subject matter, and the Examiner is kindly requested to pass it to issue. Should the Examiner have any questions regarding the claims or otherwise wish to discuss this case, he is kindly invited to contact Applicants' below-signed representative, who would be happy to provide any assistance deemed necessary in speeding this application to allowance.

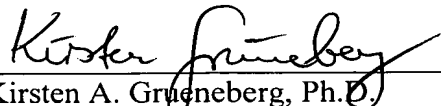
Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.
Norman F. Oblon

Customer Number

22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
NFO:KAG:


Kirsten A. Grueneberg, Ph.D.
Registration No.: 47,297